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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
ARMSTRONG, ANGELA A	

ART UNIT	PAPER NUMBER
2626	

DATE MAILED: 04/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/498,398	ANDRSEN	
	Examiner	Art Unit	
	Angela A. Armstrong	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13-21 and 26-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-21,26-59* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 13-21 and 26-59 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

3. Claims 13-21 and 26-59 define non-statutory processed because they merely manipulate an abstract idea without a claimed limitation to a practical application. The disclosed invention has a practical application in the technological arts (decoding of transmitted audio data); however, the claimed process, a series of steps to be performed by a computer, amounts to a manipulation of an abstract idea without a claimed limitation to the practical application.

The claims fail to include limitations of functional descriptive material that can impart functionality when employed as a computer component to yield a useful, tangible, concrete result.

Applicant should note, however, that claims directed to speech or audio signal processing, would be considered to be statutory subject matter. For example, the requirement of the measurements of physical objects or activities to be transformed outside of the computer into computer data (In re Gelnovatch, 595 F.2d 32, 41 n.7, 201 USPQ 136, 145 n.7 (CCPA 1979) (data- gathering step did not measure physical phenomenon); Arrhythmia, 958 F.2d at 1056, 22 USPQ2d at 1036), where the data comprises signals corresponding to physical objects or activities external to the computer system, and where the process causes a physical transformation of the signals which are intangible representations of the physical objects

or activities. Schrader, 22 F.3d at 294, 30 USPQ2d at 1459 citing with approval Arrhythmia, 958 F.2d at 1058-59, 22 USPQ2d at 1037-38; Abele, 684 F.2d at 909, 214 USPQ at 688; In re Taner, 681 F.2d 787, 790, 214 USPQ 678, 681 (CCPA 1982).

Examples of this type of claimed statutory process include the following:

- A method of using a computer processor to analyze electrical signals and data representative of human cardiac activity by converting the signals to time segments, applying the time segments in reverse order to a high pass filter means, using the computer processor to determine the amplitude of the high pass filter's output, and using the computer processor to compare the value to a predetermined value. In this example the data is an intangible representation of physical activity, i.e., human cardiac activity. The transformation occurs when heart activity is measured and an electrical signal is produced. This process has real world value in predicting vulnerability to ventricular tachycardia immediately after a heart attack.

- A method of using a computer processor to receive data representing Computerized Axial Tomography ("CAT") scan images of a patient, performing a calculation to determine the difference between a local value at a data point and an average value of the data in a region surrounding the point, and displaying the difference as a gray scale for each point in the image, and displaying the resulting image. In this example the data is an intangible representation of a physical object, i.e., portions of the anatomy of a patient. The transformation occurs when the condition of the human body is measured with X-rays and the X-rays are converted into electrical digital signals that represent the condition of the human body. The real world value of the invention lies in creating a new CAT scan image of body tissue without the presence of bones.

- A method of using a computer processor to conduct seismic exploration, by imparting spherical seismic energy waves into the earth from a seismic source, generating a plurality of reflected signals in response to the seismic energy waves at a set of receiver positions in an array, and summing the reflection signals to produce a signal simulating the reflection response of the earth to the seismic energy. In this example, the electrical signals processed by the computer represent reflected seismic energy. The transformation occurs by converting the spherical seismic energy waves into electrical signals, which provide a geophysical representation of formations below the earth's surface. Geophysical exploration of formations below the surface of the earth has real world value.

Examples of claimed processes that independently limit the claimed invention to safe harbor include:

- a method of conducting seismic exploration which requires generating and manipulating signals from seismic energy waves before "summing" the values represented by the signals (Taner, 681 F.2d at 788, 214 USPQ at 679); and

- a method of displaying X-ray attenuation data as a signed gray scale signal in a "field" using a particular algorithm, where the antecedent steps require generating the data using a particular machine (e.g., a computer tomography scanner). Abele, 684 F.2d at 908, 214 USPQ at 687 ("The specification indicates that such attenuation data is available only when an X-ray beam is produced by a CAT scanner, passed through an object, and detected upon its exit. Only after these steps have been completed is the algorithm performed, and the resultant modified data displayed in the required format.").

Examples of claimed processes that do not limit the claimed invention to pre-computing safe harbor include:

- "perturbing" the values of a set of process inputs, where the subject matter "perturbed" was a number and the act of "perturbing" consists of substituting the numerical values of variables (Gelnovatch, 595 F.2d at 41 n.7, 201 USPQ at 145 n.7 ("Appellants' claimed step of perturbing the values of a set of process inputs (step 3), in addition to being a mathematical operation, appears to be a data-gathering step of the type we have held insufficient to change a nonstatutory method of calculation into a statutory process.... In this instance, the perturbed process inputs are not even measured values of physical phenomena, but are instead derived by numerically changing the values in the previous set of process inputs.")); and,

selecting a set of arbitrary measurement point values (Sarkar, 588 F.2d at 1331, 200 USPQ at 135). If a claim does not clearly fall into one or both of the safe harbors, the claim may still be statutory if it is limited to a practical application in the technological arts.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 20 and 26-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shlomot et al (US Patent No. 5,699,481) in view of Shepard (US Patent No. 5,943,347) and further in view of Henley et al (US 5,526,353).

6. Regarding claims 26 and 47, Shlomot teaches a timing recovery scheme for packet speech in multiplexing environment of voice data with applications. Shlomot provides for

Manipulating a received sound signal to produce a sound signal, wherein the received sound signal is received from a packet switched network that looses some packets, at Figure 4, col. 3, line 45 to col. 4, line 41;

Receiving a first received frame from the packet-switched network, wherein the first received frame is part of the received sound signal, at Figure 4, col. 3, line 45 to col. 4, line 41 and col. 5, line 45 to col. 6, line 56;

Producing a first signal frame corresponding to the first received frame, at Figure 4, col. 3, line 45 to col. 4, line 41 and col. 5, line 45 to col. 6, line 56;

Wherein the first signal frame is part of the sound signal, at Figure 4, col. 3, line 45 to col. 4, line 41 and col. 5, line 45 to col. 6, line 56;

The second received frame is normally produced contiguously with the first received frame, at Figure 4, col. 3, line 45 to col. 4, line 41 and col. 5, line 45 to col. 6, line 56;

Determining after beginning the first producing step that at least part of the second received frame is currently unavailable for production, at Figure 4, col. 3, line 45 to col. 4, line 41 and col. 5, line 45 to col. 6, line 56;

Shlomot does not specifically teach producing an expanded portion, wherein the first signal frame and the expanded portion are contiguous parts of the sound signal, and the expanded portion that corresponds to a different amount of the received sound signal than either the first or second received frames.

Refer to Shepard who teaches an apparatus and method for error concealment in an audio stream. Specifically, at col. 3, line 35 continuing to col. 5, line 24, Shepard teaches determining that there is a problem with a received packet, and inserts one cycle of a fundamental pitch period with a cross-fade to replace lost or dropped data, such that the cross-fade renders transitions between boundaries of existing, original data and any inserted data much smoother.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the system of Shlomot to implement cross fading based in part upon a change in network status, as taught by Shepard, for the purpose of rendering transitions between boundaries of existing, original data and any inserted data much smoother, as suggested by Shepard.

Shlomot and Shepard do not teach the first signal frame and the expanded portion have different time lengths in the sound signal. Henley et al discloses a system for communicating audio data in a packet-based computer network having variable periods of transmission time, and specifically provides for audio data samples of various sizes and variable transmission delays being placed into the receiving buffer as a function of the position identifier contained in each data packet, wherein the position identifier may be a function of a length of audio data sample in a previously-transmitted data packet and the position identifier directs each audio data sample into specified absolute positions of the receiving buffer at the receiving end (col. 13, line 36 continuing to col. 15, line 46). Henley teaches the system for transmitting and receiving digitized audio data to compensate for transmission times of variable packets.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the system of Shlomot to implement cross fading based in part upon a change in

network status, as taught by Shepard, for the purpose of rendering transitions between boundaries of existing, original data and any inserted data much smoother, as suggested by Shepard, and to further modify the system to provide for a receiver/decoder to reconstruct the original signal using different portions of the audio data sample, as suggested by Henley, for the purpose of reducing effects of missed or delayed packets, as also suggested by Henley.

Regarding claim 27, 31, 33, 35-37, and 40, Shlomot, Shepard, and Henley teach everything as claimed in claim 26. Shlomot does not specifically teach the expanded portion is selected from the first signal frame based, at least in part, upon measures of periodicity or that the portions are merged based, at least in part, on overlap-add. Shepard teaches determining that there is a problem with a received packet, and inserts one cycle of a fundamental pitch period with a cross-fade to replace lost or dropped data, such that the cross-fade renders transitions between boundaries of existing, original data and any inserted data much smoother.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the system of Shlomot to implement cross fading based in part upon a change in network status, as taught by Shepard, for the purpose of rendering transitions between boundaries of existing, original data and any inserted data much smoother, as suggested by Shepard.

Regarding claim 28, Shlomot, Shepard, and Henley teach everything as claimed in claim 26. Additionally, Shlomot teaches determining step comprises determining near the end of production of the first signal frame if the second received frame is currently unavailable for production, Figure 4, col. 3, line 45 to col. 4, line 41.

Regarding claims 29, 30, 32, 45, and 46, Shlomot, Shepard, and Henley teaches everything as claimed in claim 26. Additionally, Shlomot teaches determining after beginning the second producing step that the second received frame is still unavailable for production, at Figure 4, col. 3, line 45 to col. 4, line 41.

Shlomot does not specifically teach producing a second expanded portion, wherein the expanded portion and the second expanded portion are contiguous parts of the sound signal.

Shepard teaches determining that there is a problem with a received packet, and inserts one cycle of a fundamental pitch period with a cross-fade to replace lost or dropped data, such that the cross-fade renders transitions between boundaries of existing, original data and any inserted data much smoother.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the system of Shlomot to implement cross fading based in part upon a change in network status, as taught by Shepard, for the purpose of rendering transitions between boundaries of existing, original data and any inserted data much smoother, as suggested by Shepard.

Regarding claims 20, 34, 38, and 39, Shlomot, Shepard, and Henley teach everything as claimed in claim 26. Additionally, Shlomot teaches the signal frame corresponds to a plurality of received frames, at col. 3, line 66 to col. 4, line 1.

Regarding claims 41-44 and 48-59, claims 41-44 and 48-59 are similar in scope and content to claims 26-40, and are therefore rejected under similar rationale.

7. Claims 13-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shlomot in view of Shepard and Henley, as applied to claim 26 above, in further view of Kubin et al, "Time Scale Modification of Speech Based on a Non-linear Oscillator Model," IEEE, 1994, page 453-456.

8. Regarding claims 13-19 and 21, Shlomot, Shepard, and Henley teach everything as claimed in claim 26. Additionally, Shlomot teaches the system manipulates the length of received signal frames by performing time expansion or time compression of one or more signal frames at time varying intervals and with time varying lengths of the expansion or the compression at col. 3, line 67 continuing to col. 5, line 34; time varying lengths dependent upon a signal fitting criteria with respect to signal characteristics at col. 4, lines 55-63; col. 6, line 65 to col. 7, line 4; col. 7, lines 15-20; length manipulation is a fraction of the time between two samples at col. 4, lines 55-63; col. 6, line 65 to col. 7, line 4; col. 7, lines 15-20. Shlomot and Shepard do not specifically implement an oscillator model when manipulating the lengths of the signal frames.

Kubin discloses a system for time-scale modification of speech based on a nonlinear oscillator model. Specifically, Kubin describes the oscillator model (page 453, col. 1, section 1.2), a state-transition codebook (page 453, col. 1, section 1.3) and application of the oscillator and codebook in time-scale modification (page 455, col.1, section 3). Kubin teaches that the system provides for high quality output at moderate computational cost.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to implement the time scale modification with oscillator model and state codebook techniques of

Kubin in the timing recovery system of Shlomot, for the purpose of improving the speech quality of the transmitted speech at a moderate computational cost.

Response to Arguments

9. Applicant's arguments filed January 25, 2006 have been fully considered but they are not persuasive.

10. Applicant argues none of the references individually or in combination teach or suggest the limitations of independent claims 26, 43, and 44. Applicant argues Shepard fails to teach "the expanded portion corresponding to a different amount of the received sound signal than either the first or second received frame" as recited in claim 26 and "the first expanded portion has a different size than either the first or second received frames" and "the second expanded portion has a different size than either the third or fourth received frames" as recited in claim 43. Applicant also argues Henley also fails to teach "the first signal frame and the expanded portion have different time lengths in the sound signal" as recited in claim 26, "the first and third signal frames have a frame size that is different from a size of the first expanded portion" as recited in claim 43 and "the expanded portion has a size that is different than a frame size of the first signal frame" as recited in claim 44.

11. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this instance, applicant argues Shepard fails to teach "the expanded portion corresponding to a different amount of the received

sound signal than either the first or second received frame" as recited in claim 26 and "the first expanded portion has a different size than either the first or second received frames" and "the second expanded portion has a different size than either the third or fourth received frames" as recited in claim 43; the Examiner argues the combination of Shlomot, Shepherd and Henley provide support for the limitations, in indicated in the previous Office Action and as repeated above. Additionally, Applicant also argues Henley also fails to teach "the first signal frame and the expanded portion have different time lengths in the sound signal" as recited in claim 26, "the first and third signal frames have a frame size that is different from a size of the first expanded portion" as recited in claim 43 and "the expanded portion has a size that is different than a frame size of the first signal frame" as recited in claim 44; the Examiner cannot concur. The combination of Shlomot and Shepherd provide support for the limitations of a method to fill the gap of lost audio data samples and provides a means for an expanded portion for missing or erroneous audio data samples. Thus, the combination of Shlomot, Shepherd and Henley provide support for the limitations drawn to a first signal frame and an expanded portion having different time lengths in a sound signal, a first and third signal frames having a frame size that is different from a size of a first expanded portion and an expanded portion having a size that is different than a frame size of a first signal frame.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela A. Armstrong whose telephone number is 571-272-7598. The examiner can normally be reached on Monday-Thursday 11:30-8:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Please note the change in art unit designation for the examiner from old art unit "2654" to new art unit "2626."

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Angela Armstrong

Angela A Armstrong
Primary Examiner
Art Unit 2626

AAA
April 16, 2006